

WHAT IS CLAIMED IS:

1. A switching apparatus, comprising: a rear panel; a front panel fixedly connected with said rear panel and having a holder portion; a switch device including
5 a stationary contact member fixedly mounted on said rear panel, and a movable contact member movable with respect to said stationary contact member to assume two different positions including a switch-on position where said movable contact member is brought in contact with said stationary contact member to establish electrical connection between said movable contact member and said stationary
10 contact member and a switch-off position where said movable contact member is brought out of contact with said stationary contact member to establish electrical disconnection between said movable contact member and said stationary contact member; and a push button including a pair of horn projections protruding in opposite directions and each having a center axis, said push button being supported on said
15 front panel with said horn projections frictionally held in said holder portion of said front panel, said push button adapted to support said movable contact member and pivotable around said center axis of said horn projections together with said movable contact member in two different directions including a button-pushed direction to have said movable contact member move with respect to said stationary contact member toward said switch-on position and a button-released direction to have said
20 movable contact member move with respect to said stationary contact member toward said switch-off position.

2. A switching apparatus as set forth in claim 1, in which each of said horn
25 projections is in the form of a circular cross-section shape having a diameter, each of said horn projections extending substantially along said center axis, said holder portion has a bottom plate fixedly supported on said front panel, a first plate and a second plate opposing to and spaced apart from each other across said bottom plate, said first plate and said second plate fixedly supported on said bottom plate, said front
30 panel further includes a cover plate securely mounted on said holder portion to define a closed space having each of said horn projections received therein, said cover plate of said front panel and said bottom plate of said holder portion respectively having inner surfaces, said inner surfaces of said cover plate of said front panel and said bottom plate of said holder portion opposing to and spaced apart from each other at a
35 distance therebetween, and said distance of said inner surfaces of said cover plate of said front panel and said bottom plate of said holder portion is equal to or less than said diameter of each of said horn projections to have each of said horn projections

frictionally held in said holder portion of said front panel.

3. A switching apparatus as set forth in claim 2, in which each of said horn projections has first and second contact portions respectively held in pressing contact with said inner surfaces of said bottom plate of said holder portion and said cover plate of said front panel, and a center plane passing through said diameter of each of said horn projections and perpendicular to said bottom plate of said holder portion, each of said horn projections is elastically deformable along said center plane, and said first and second contact portions of each of said horn projections are on said center plane, and spaced apart from and in parallel relationship with each other.

4. A switching apparatus as set forth in claim 2, in which said first plate and said second plate of said holder portion have respective inner surfaces, said inner surfaces of said first plate and said second plate of said holder portion opposing to and spaced apart from each other at a distance therebetween, and said distance of said inner surfaces of said first plate and said second plate of said holder portion is equal to or greater than said diameter of each of said horn projections.

5. A switching apparatus as set forth in claim 3, in which said cover plate of said front panel is elastically deformable with respect to said center plane of each of said horn projections to have each of said horn projections frictionally held in said holder portion of said front panel.

6. A switching apparatus as set forth in claim 2, in which said first plate and said second plate of said holder portion have respective inner surfaces opposing to and spaced apart from each other at a distance therebetween, and said distance of said inner surfaces of said first and second plates of said holder portion is gradually tapered toward said cover plate in such a manner that said distance close to said cover plate is smaller than said distance remote from said cover plate.

7. A switching apparatus as set forth in claim 6, in which said distance of said inner surfaces of said first and second plates of said holder portion at said cover plate is equal to or less than said diameter of each of said horn projections to have each of said horn projections frictionally held in said holder portion of said front panel.

8. A switching apparatus as set forth in claim 6, in which at least one of said first plate and said second plate of said holder portion is elastically deformable with

respect to said bottom plate to have each of said horn projections received in said holder portion of said front panel.

9. A switching apparatus as set forth in claim 1, in which each of said horn
5 projections is in the form of a circular cross-section shape having a diameter, each of
said horn projections extending substantially along said center axis, said holder
portion has a bottom plate fixedly supported on said front panel, a first plate and a
second plate opposing to and spaced apart from each other across said bottom plate,
10 said first plate and said second plate of said holder portion respectively have first ends
fixedly supported on said bottom plate and second ends integrally formed with
respective ledges inwardly projected toward each other with respect to said bottom
plate, said ledges of said first plate and said second plate have respective inner
surfaces opposing to and spaced apart from each other at a distance therebetween, said
15 distance of said inner surfaces of said ledges is gradually tapered in such a manner
that said distance remote from said bottom plate is smaller than said distance close to
said bottom plate, and said distance of said inner surfaces of said ledges remotest
from said bottom plate is less than said diameter of each of said horn projections.

10. A switching apparatus as set forth in claim 9, in which said inner surfaces of
20 said ledges remotest from said bottom plate are opposing to and spaced apart from
said bottom plate at a distance equal to or less than said diameter of each of said horn
projections to have each of said horn projections frictionally held in said holder
portion of said front panel.

11. A switching apparatus as set forth in claim 9, in which at least one of said
25 ledges of said first plate and said second plate is elastically deformable with respect to
said bottom plate to have each of said horn projections received in said holder portion
of said front panel.

12. A switching apparatus as set forth in claim 1, which further comprises: at
30 least one subsequent push button disposed in the vicinity of said push button, said
subsequent push button including a pair of horn projections protruding in opposite
directions and each having a center axis, said subsequent push button being supported
on said front panel with said horn projections frictionally held in said holder portion
35 of said front panel and pivotable around said center axis of said horn projections
together with a movable contact member in two different directions including a
button-pushed direction to have said movable contact member move with respect to a

stationary contact member toward a switch-on position and a button-released direction to have said movable contact member move with respect to said stationary contact member toward a switch-off position; and a connecting member for connecting one of said horn projections of said subsequent push button with one of said horn projections of said push button.

13. A switching apparatus as set forth in claim 12, in which said connecting member has a torsional rigidity large enough to withstand a torsional force imparted by said one of said horn projections when said push button is pivoted around said center axis of said horn projections.

14. A switching apparatus as set forth in claim 12, in which said connecting member is a connecting rod in the form of a hollow shape having pivotably received therein one of said horn projections.

15. A switching apparatus as set forth in claim 1, in which said front panel has formed therein a groove, having each of said horn projections received therein.

16. A switching apparatus as set forth in claim 1, each of said horn projections is in the form of an elliptical cross-section shape.

17. A switching apparatus, comprising: a support member having a holder portion; a push button having a rotation shaft rotatably and tightly supported on said holder portion of said support member; and a switching device operative to perform a switching action with the rotation of said push button.

18. A switching apparatus as set forth in claim 17, in which said holder portion of said support member has a pair of wall surfaces held in frictional contact with said rotation shaft of said push button.

19. A switching apparatus as set forth in claim 18, in which said holder portion of said support member is partly constituted by a deformable wall section to ensure that said holder portion is deformed to tightly hold said rotation shaft.

20. A switching apparatus, comprising: a support member having a holder portion; a plurality of push buttons each having a rotation shaft rotatably and tightly supported on said holder portion of said support member; said push buttons being

connected with a connected member made of a resilient material to ensure that when one of said push buttons is operated, the others of said push buttons is prevented from being operated.